Rounding of Modeled Concentrations for Comparison with the National Ambient Air Quality Standards
January 2013

Each National Ambient Air Quality Standard (NAAQS) has its own rounding convention found in 40 CFR Part 50. Although the rounding conventions are focused on monitored data, the same principles apply to modeled concentrations. It is acceptable to apply these rounding conventions to modeled concentrations for comparison with the NAAQS.

The rounding truncation criteria and rounding conventions for each NAAQS as described in 40 CFR Part 50 are summarized in Table 1.

Table 1. Truncation Criteria and Rounding Conventions

Pollutant	Averaging Period	Truncation Criteria and Rounding Convention	Reference 40 CFR 50
NO_2	1-hr	Values truncated after one decimal place. Round to nearest 1 ppb (values 0.5 or greater round up).	Appendix S, Section 4
	Annual	Values truncated after one decimal place. Round to nearest 1 ppb (values 0.5 or greater round up).	Appendix S, Section 4
SO_2	1-hr	Values truncated after one decimal place. Round to nearest 1 ppb (values 0.5 or greater round up).	Appendix T, Section 4
	3-hr	Round to nearest 0.1 ppm (values 0.05 or greater round up)	40 CFR 50.5
	24-hr	Round to nearest 0.01 ppm (values 0.005 or greater round up)	40 CFR 50.4
	Annual	Round to nearest 0.001 ppm (values 0.0005 or greater round up)	40 CFR 50.4
$PM_{2.5}$	24-hr	Values truncated after one decimal place. Round to nearest 1 $\mu g/m^3$ (values 0.5 or greater round up)	Appendix N, Sections 3,4
	Annual	Values truncated after one decimal place. Round to nearest 0.1 $\mu g/m^3$ (values 0.05 or greater round up)	Appendix N, Sections 3,4
PM_{10}	24-hr	Round to nearest 10 $\mu g/m^3$ (values 5 or greater round up)	Appendix K, Section 1
CO	1-hr	Round to nearest 0.1 ppm (values 0.5 or greater round up)	40 CFR 50.8
	8-hr	Round to nearest 0.1 ppm (values 0.5 or greater round up)	40 CFR 50.8
Pb	3-mo rolling	Round to nearest 0.01 $\mu g/m^3$ (values 0.005 or greater round up)	Appendix R Section 4

Based on the rounding conventions and truncation criteria found in 40 CFR Part 50, modeled values that would be considered to demonstrate attainment of the NAAQS has been determined. For consistency and ease of comparison, the modeled values acceptable for demonstrating attainment with the NAAQS are listed in Table 2. There is no guidance available for rounding of μg/m^3 NAAQS values calculated from for gaseous pollutants, therefore the calculated values for NO_2 and the 1-hour averaging period of SO_2 were truncated at one decimal place and the 3-hour, 24-hour and annual averaging periods of SO_2 and the CO values were rounded to 1 decimal place.

Table 2: Modeled Values that Demonstrate Attainment of the NAAQS

Pollutant	**Averaging Period**	**Modeled Attainment of NAAQS***	
		ppb/ppm	**μg/m^3**
NO_2	1-hr Annual	100.4 ppb 53.4 ppb	188.8 100.4
SO_2	1-hr 3-hr 24-hr Annual	75.4 ppb 0.54 ppm 0.1449 ppm 0.03049 ppm	197.4 1414.3 377.2 79.6
$PM_{2.5}$	24-hr Annual	NA NA	35.4 12.04 (15.04**)
PM_{10}	24-hr	NA	154
CO	1-hr 8-hr	35.4 ppm 9.4 ppm	40,538.1 10,764.3
Pb	3-mo rolling average	NA	0.154

* For gaseous pollutants with ppb and ppm NAAQS, calculation μg/m3 values are converted using the formula μg/m^3 = (ppm X molecular weight)/0.02446 @ 25 C.

** For non-PSD modeling analyses, the DNR will continue to evaluate the annual $PM_{2.5}$ NAAQS of 15 μg/m^3 until the DNR establishes rules and procedures for the new NAAQS of 12 μg/m^3.